

# **NEW MEXICO ENVIRONMENT DEPARTMENT (NMED) POLICY FOR THE ABOVE GROUND USE OF RECLAIMED DOMESTIC WASTEWATER**

August 7, 2003

## **I. PURPOSE**

This Policy describes requirements for minimum discharge standards for the above ground use of reclaimed domestic wastewater (“reclaimed wastewater”) to ensure protection of public health and the environment. NMED has developed this Policy to promote the safe use of reclaimed wastewater to offset the use of limited potable water resources in the State. The Policy is intended to provide direction to NMED staff in review of Ground Water Discharge Permit applications which include the use of reclaimed wastewater in order to ensure consistency in the application review process and in the development of permit requirements to the fullest extent possible. The Policy will also be made available to the regulated community and their consultants to provide guidance for future facility planning. It is recommended that Ground Water Discharge Permits that include the discharge of reclaimed wastewater contain at a minimum the standards set forth in this Policy. NMED will review all permit applications objectively and with professional judgment to establish whether they conform to applicable laws, regulations, and requirements. NMED encourages the development and implementation of new processes and equipment, and will favorably consider them with an appropriate demonstration of meeting the performance standards contained within this Policy.

The responsibility of meeting the standards set forth in this Policy shall be assigned to the generator of the reclaimed wastewater unless this responsibility is assumed by a separate entity pursuant to an approved Ground Water Discharge Permit. Implementation of the standards for existing dischargers will be determined on a individual facility basis at the time of permit renewal and/or modification.

Finally, the discharge of reclaimed wastewater may also be regulated by the United States Environmental Protection Agency (EPA) or the New Mexico Construction Industries Division (CID). Discharges to waters of the United States (including ephemeral streams and dry arroyos) require a National Pollutant Discharge Elimination System permit from EPA. The use of reclaimed wastewater for indoor plumbing (e.g., toilet flushing, fire suppression) requires approval from CID.

## **II. DEFINITIONS**

Agronomic Rate: the rate of application of nutrients to plants that is necessary to satisfy the plants’ nutritional requirements while strictly minimizing the amount of nutrients that run off to surface waters or which pass below the root zone of the plants.

Class 1A Reclaimed Wastewater: the highest quality reclaimed wastewater described in this Policy and can be most broadly utilized except for direct consumption. [approved uses listed in Table 1]

Class 1B Reclaimed Wastewater: the second highest quality reclaimed wastewater described in this Policy and is suitable for uses in which public exposure is likely. [approved uses listed in Table 1]

Class 2 Reclaimed Wastewater: reclaimed wastewater suitable for uses in which public access and exposure is restricted. [approved uses listed in Table 1]

Class 3 Reclaimed Wastewater: reclaimed wastewater suitable for uses in which public access and exposure is prohibited. [approved uses listed in Table 1]

Domestic wastewater: wastewater containing human excreta and water carried waste from typical residential plumbing fixtures and activities, including but not limited to wastes from toilets, sinks, bath fixtures, clothes or dishwashing machines and floor drains. Municipal and private wastewater treatment facilities receiving industrial waste must demonstrate adequate industrial waste pretreatment.

Dwelling unit: a structure which contains bedrooms.

Establishment: a structure used as a place of business, education, or assembly.

Flood Irrigation: land application of reclaimed wastewater by ditches, furrows, pipelines and other non-sprinkler methods.

Food Crops: any crop intended for human consumption.

Grab Sample: an individual sample collected in less than 15 minutes.

Major WWTP: any treatment plant with a maximum design capacity of 1,000,000 gallons or more per day.

Minor WWTP: any treatment plant with a maximum design capacity of less than 1,000,000 gallons per day.

Monthly Geometric Mean: value calculated by taking the sum of the logarithms (sum log x) of each of the data points from the previous calendar month, dividing the sum by the number of data points and then taking the anti-logarithm of the result ( $10^y$  = anti-logarithm of 'y').

NTU: nephelometric turbidity units.

Occupied establishment: any establishment that is occupied at the time of irrigation.

Peak hourly flow: the highest hourly flow rate within a 24 hour period.

Reclaimed wastewater: domestic wastewater that has been treated to the standards required for the specific uses set forth in this policy and other applicable local, state, or federal regulations.

Spray Irrigation: land application of reclaimed wastewater by dispersing it in the air utilizing equipment which provides a low trajectory application and which minimizes misting of the reclaimed wastewater.

Surface Drip Irrigation: any method of land application of reclaimed wastewater through an array of emitters placed on or above the ground surface, each of which has a maximum discharge rate of 1.0 gallon per hour.

3-hour Composite Sample: three effluent portions collected no closer together than one hour (collected between 8:00 am and 4:00 pm) and composited in proportion to flow.

6-hour Composite Sample: six effluent portions collected no closer together than one hour (collected between 8:00 am and 4:00 pm) and composited in proportion to flow.

24-hour Composite Sample: twenty-four effluent portions collected no closer together than one hour and composited in proportion to flow.

30-day Average:

*For fecal coliform bacteria*: the geometric mean of the values for all effluent samples collected during a calendar month.

*For other than for fecal coliform bacteria*: the arithmetic mean of the daily values for all effluent samples collected during a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

### III. BACKGROUND

This Policy supersedes the New Mexico Environmental Improvement Division (NMEID) 1985 Policy for the Use of Domestic Wastewater Effluent for Irrigation. The Policy establishes specific quality standards, operational requirements, and approved uses for different categories of reclaimed wastewater (Class 1A, Class 1B, Class 2, and Class 3) dependent on public exposure. While the standards set forth in this Policy are deemed protective of public health and the environment, the policy does not prevent communities from adopting more stringent requirements.

### IV. WASTEWATER TREATMENT PROCESS REQUIREMENTS

The quality standards for Class 1B, Class 2, and Class 3 assume a minimum of conventional secondary wastewater treatment plus disinfection. Class 1A assumes treatment to remove colloidal organic matter, color and other substances that interfere with disinfection, thereby allowing for the use of the reclaimed wastewater for urban landscaping adjacent to dwelling units or occupied establishments.

### V. GENERAL ABOVE GROUND USE PERMIT REQUIREMENTS

#### A. ALL APPROVED USES

1. Whenever reclaimed wastewater is used for any use approved in this Policy, the wastewater shall meet the minimum standards set forth in this Policy.
2. Whenever reclaimed wastewater other than Class 1A is used in areas with public access it shall be applied at times and in a manner that minimizes public contact.
3. Whenever reclaimed wastewater is used in areas with restricted public access, the public shall be excluded from entering the area.
4. Reclaimed wastewater shall only be used for soil compaction or dust control in construction areas where application procedures minimize aerosol drift to public areas.
5. Reclaimed wastewater quality standards shall be measured at the discharge point of the wastewater treatment plant.
6. Signs (in English and Spanish) shall be placed at the entrance to areas receiving reclaimed wastewater, and other locations where public access may occur stating: **“NOTICE – THIS AREA IS IRRIGATED WITH RECLAIMED WASTEWATER – DO NOT DRINK”**; **“AVISO – ESTA ÁREA ESTÁ REGADA CON AGUAS NEGRAS RECOBRADAS – NO TOMAR”**
7. All piping, valves and outlets, shall be color-coded in purple pursuant to the latest revision of the New Mexico Plumbing and Mechanical Code to differentiate piping or fixtures used to convey reclaimed wastewater from piping or fixtures used for potable or other water. All valves, outlets, and sprinkler heads used in reclaimed wastewater systems should be of a type that can only be operated by authorized personnel. Those portions of reclaimed wastewater systems that are underground and were installed prior to the adoption of this Policy are exempt from the purple color-coding requirement if all accessible portions of the reclaimed wastewater system are colored purple or clearly labeled as being part of a reclaimed wastewater distribution system.
8. Reclaimed wastewater systems shall have no direct or indirect cross connections with potable water systems pursuant to the latest revision of the New Mexico Plumbing and Mechanical Code. For reclaimed wastewater systems that were installed prior to the adoption of this Policy, the absence of cross connections may be demonstrated via

hydrostatic testing or as-built drawings, supported by an affidavit under oath that no cross connection exists.

9. Above ground use of reclaimed wastewater shall not result in excessive standing or pooling of wastewater, and shall be applied at the appropriate agronomic rate. Irrigation shall not be conducted at times when the receiving area is saturated or frozen.
10. The discharge of reclaimed wastewater shall be confined to the area designated and approved for receiving the wastewater. Irrigation shall be postponed at times when windy conditions may result in drift of reclaimed wastewater outside the designated area of application.
11. Treatment facilities which provide reclaimed wastewater to parks, golf courses, schools and other areas where human exposure is likely, must have an emergency storage pond or alternate disposal method where reclaimed wastewater can be diverted during periods when conditions are unfavorable for approved uses or when the quality standards defined in this Policy cannot be met.

#### **B. IRRIGATION OF FOOD CROPS**

1. Reclaimed wastewater shall not be used for the spray irrigation of food crops.
2. Reclaimed wastewater shall not be used for surface irrigation of food crops except where there is no contact between the edible portion of the crop and the wastewater, and the wastewater shall have a level of quality no less than Class 1B Reclaimed Wastewater (Table 2).

#### **C. IRRIGATION OF FODDER, FIBER AND SEED CROPS**

1. Reclaimed wastewater used for the irrigation of pasture to which milking cows or goats have access shall have a level of quality no less than Class 2 Reclaimed Wastewater (Table 2).
2. Except pasture for milk-producing animals, reclaimed wastewater used for the irrigation of fodder, fiber and seed crops shall have a level of quality no less than Class 3 Reclaimed Wastewater (Table 2).

#### **D. IRRIGATION OF LANDSCAPES**

1. Reclaimed wastewater used for irrigation shall be applied such that direct and windblown spray is confined to the area designated and approved for application.
2. Reclaimed wastewater used for the irrigation of freeway landscapes and landscapes in other areas where the public has similarly limited access or exposure shall have a level of quality no less than Class 2 Reclaimed Wastewater (Table 2). Public access to the irrigation site must be restricted during the period of application.
3. Reclaimed wastewater used for the irrigation of parks, playgrounds, schoolyards, golf courses, cemeteries and other areas where the public has similarly open access or exposure shall have a level of quality no less than Class 1B Reclaimed Wastewater (Table 2), and the irrigation system must have low trajectory spray nozzles. *Areas which are spray irrigated and located within 100 feet of a dwelling unit or occupied establishment shall only receive Class 1A Reclaimed Wastewater (Tables 2 & 3).*

## VI. SPECIFIC ABOVE GROUND USE REQUIREMENTS

### A. CLASSIFICATION AND USES OF RECLAIMED WASTEWATER

This Policy establishes four classes of reclaimed wastewater (Class 1A, Class 1B, Class 2, and Class 3) based on the quality of the wastewater following treatment and disinfection, and dependent on the likelihood of public exposure. Class 1A reclaimed wastewater may be used for any purpose except direct consumption, food handling and processing, and spray irrigation of food crops. Class 1B reclaimed wastewater may be used where public exposure is likely, and where the appropriate setback requirements are met (Table 3). Class 2 and Class 3 reclaimed wastewater may be used where public access is restricted with correspondingly less stringent requirements for treatment and disinfection.

Table 1 presents the approved uses for Classes 1A, 1B, 2, and 3 reclaimed wastewater. Any reclaimed wastewater treated to higher quality than the lower classes may be used for the purposes established for the lower classes. *Other uses of reclaimed wastewater not included in Table 1 must be evaluated on a case by case basis by NMED for review and approval.*

**Table 1. Approved Uses for Reclaimed Wastewater by Class**

Class of Reclaimed Wastewater	Approved Uses
Class 1A	All Class 1 uses. <i>No setback limit</i> to dwelling unit or occupied establishment.
	Backfill around potable water pipes
	Irrigation of food crops <sup>1</sup>
Class 1B	Impoundments (recreational or ornamental)
	Irrigation of parks, school yards, golf courses <sup>2</sup>
	Irrigation of urban landscaping <sup>2</sup>
	Snow making
	Street cleaning
	Toilet flushing
	Backfill around non-potable piping
Class 2	Concrete mixing
	Dust control
	Irrigation of fodder, fiber, and seed crops for milk-producing animals
	Irrigation of roadway median landscapes
	Irrigation of sod farms
	Livestock watering
	Soil compaction
Class 3	Irrigation of fodder, fiber, and seed crops for non-milk-producing animals
	Irrigation of forest trees (silviculture)

<sup>1</sup> Irrigation of food crops shall only be allowed for food crops when there is no contact between the edible portion of the crop and the wastewater. Spray irrigation is prohibited for food crops.

<sup>2</sup> If reclaimed wastewater is applied using spray irrigation, the setback limitation of Table 3 “Spray Irrigation” is required.

## **B. WASTEWATER QUALITY STANDARDS AND MONITORING REQUIREMENTS**

This section establishes minimum wastewater quality standards and monitoring frequencies for Classes 1A, 1B, 2, and 3 of reclaimed wastewater. The frequency of wastewater quality monitoring is patterned after EPA requirements for discharges of treated and disinfected wastewater to surface waters. The monitoring requirements are dependent on the quality of reclaimed wastewater produced at the treatment plant and the design capacity of the treatment plant. For example, a “major” wastewater treatment plant (having a maximum design capacity of 1 million gallons or more per day) producing Class 1A Reclaimed Wastewater has the most stringent monitoring requirements. The wastewater quality standards and monitoring frequencies for Classes 1A, 1B, 2, and 3 of reclaimed wastewater are presented below in Table 2. In the event that a facility proposes alternate wastewater quality standards and/or monitoring frequencies, it is the responsibility of the facility owner/operator to demonstrate that the proposed alternate provides equal assurance of the protection of public health and ground water as the minimum standards.

Reclaimed wastewater generated from communities with significant commercial and/or industrial wastewater generators may be subject to more extensive contaminant screening and monitoring requirements.

**Table 2. Wastewater Quality Standards and Monitoring Frequencies by Class of Reclaimed Wastewater.**

Class of Reclaimed Wastewater	Wastewater Quality Parameter	Wastewater Quality Standards		Wastewater Monitoring Requirements	
		30-Day Average	Maximum	Sample Type	Measurement Frequency
Class 1A	BOD <sub>5</sub>	10 mg/l	15 mg/l	6-hour composite <sup>5</sup>	3 tests per week for major WWTP <sup>1</sup> ; 1 test per 2 weeks for minor WWTP
	Turbidity	3 NTU	5 NTU	Continuous	Continuous
	Fecal Coliform <sup>2</sup>	5 per 100 ml <sup>3</sup>	23 per 100 ml <sup>4</sup>	Grab sample at peak flow	3 tests per week for major WWTP; 1 test per week for minor WWTP
	TRC or UV Transmissivity	Monitor Only	Monitor Only	Grab sample or reading at peak flow	Record values at peak hourly flow
Class 1B	BOD <sub>5</sub>	30 mg/l	45 mg/l	6-hour composite <sup>5</sup>	3 tests per week for major WWTP <sup>1</sup> ; 1 test per 2 weeks for minor WWTP
	TSS	30 mg/l	45 mg/l	6-hour composite	3 tests per week for major WWTP <sup>1</sup> ; 1 test per 2 weeks for minor WWTP
	Fecal Coliform <sup>2</sup>	100 organisms per 100 ml <sup>3</sup>	200 organisms per 100 ml <sup>4</sup>	Grab sample at peak flow	3 tests per week for major WWTP; 1 test per week for minor WWTP
	TRC or UV Transmissivity	Monitor Only	Monitor Only	Grab sample or reading at peak flow	Record values at peak hourly flow
Class 2	BOD <sub>5</sub>	30 mg/l	45 mg/l	6-hour composite for major WWTP <sup>5</sup> ; Grab sample for minor WWTP	1 test per week for major WWTP; 1 test per month for minor WWTP
	TSS	30 mg/l	45 mg/l	6-hour composite for major WWTP; Grab sample for minor WWTP	1 test per week for major WWTP; 1 test per month for minor WWTP

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Class of Reclaimed Wastewater	Wastewater Quality Parameter	Wastewater Quality Standards		Wastewater Monitoring Requirements	
		30-Day Average	Maximum	Sample Type	Measurement Frequency
Class 2 continued	Fecal Coliform <sup>2</sup>	200 organisms per 100 ml <sup>3</sup>	400 organisms per 100 ml <sup>4</sup>	Grab sample at peak hourly flow	1 test per week for major WWTP; 1 test per month for minor WWTP
	TRC or UV Transmissivity	Monitor Only	Monitor Only	Grab sample or reading at peak hourly flow	Record values at peak hourly flow
Class 3	BOD <sub>5</sub>	30 mg/l	45 mg/l	3-hour composite for major WWTP <sup>5</sup> ; Grab sample for minor WWTP	1 test per week for major WWTP; 1 test per month for minor WWTP
	TSS	75 mg/l	90 mg/l	3-hour composite for major WWTP; Grab sample for minor WWTP	1 test per week for major WWTP; 1 test per month for minor WWTP
	Fecal Coliform <sup>2</sup>	1,000 organisms per 100 ml <sup>3</sup>	5,000 organisms per 100 ml <sup>4</sup>	Grab sample at peak hourly flow	1 test per week for major WWTP; 1 test per month for minor WWTP
	TRC or UV Transmissivity	Monitor Only	Monitor Only	Grab sample or reading at peak hourly flow	Record values at peak hourly flow

<sup>1</sup> The composite samples must be taken on separate days.

<sup>2</sup> The E. coli organism may alternately be tested once equivalent concentrations are determined.

<sup>3</sup> Measured as the monthly geometric mean.

<sup>4</sup> Single sample maximum value.

<sup>5</sup> 24-hour composite sampling may be used in lieu of 3 or 6-hour composite sampling requirements.



### C. ACCESS RESTRICTIONS AND SET-BACK REQUIREMENTS

Table 3 presents the minimum standards for access controls and setback distances necessary to minimize direct and indirect public exposure to reclaimed wastewater. Setback distances required in this Policy are in all cases the distance from the edge of any area receiving reclaimed wastewater to well casings, dwelling unit, or occupied establishment.

*In addition to the setback requirements described in Table 3, all water supply wells within 200 feet of a wetted irrigation area must be evaluated for adequate well head construction and irrigation practices to ensure protection of ground water. NMED may impose setback requirements as needed to make certain that the application of reclaimed wastewater does not threaten ground water resources.*

**Table 3. Access Restrictions and Set Back Requirements**

<b>Class of Reclaimed Wastewater</b>	<b>Spray Irrigation</b>	<b>Flood Irrigation and Surface Drip Irrigation</b>
Class 1A	<ul style="list-style-type: none"> <li>• No access control</li> <li>• No setback to dwelling unit or occupied establishment</li> </ul>	<ul style="list-style-type: none"> <li>• No access control</li> </ul>
Class 1B	<ul style="list-style-type: none"> <li>• No access control; irrigate at times when public exposure is unlikely</li> <li>• 100 ft set-back from dwelling unit or occupied establishment</li> </ul>	<ul style="list-style-type: none"> <li>• No access control; irrigate at times when public exposure is unlikely</li> </ul>
Class 2	<ul style="list-style-type: none"> <li>• Access restricted by perimeter fencing using 4-strand barbed wire and locking gate or other NMED approved access controls</li> <li>• 100 ft set-back from dwelling unit or occupied establishment</li> </ul>	<ul style="list-style-type: none"> <li>• Access restricted by perimeter fencing using 4-strand barbed wire and locking gate, or other NMED approved access controls</li> </ul>
Class 3	<ul style="list-style-type: none"> <li>• Access restricted by perimeter fencing using 4-strand barbed wire and locking gate</li> <li>• 500 ft set-back from dwelling unit or occupied establishment</li> <li>• Low pressure/low trajectory irrigation system only</li> </ul>	<ul style="list-style-type: none"> <li>• Access restricted by perimeter fencing using 4-strand barbed wire and locking gate</li> <li>• 100 ft set-back to dwelling unit or occupied establishment.</li> </ul>

Ron Curry, Secretary  
Environment Department

Date